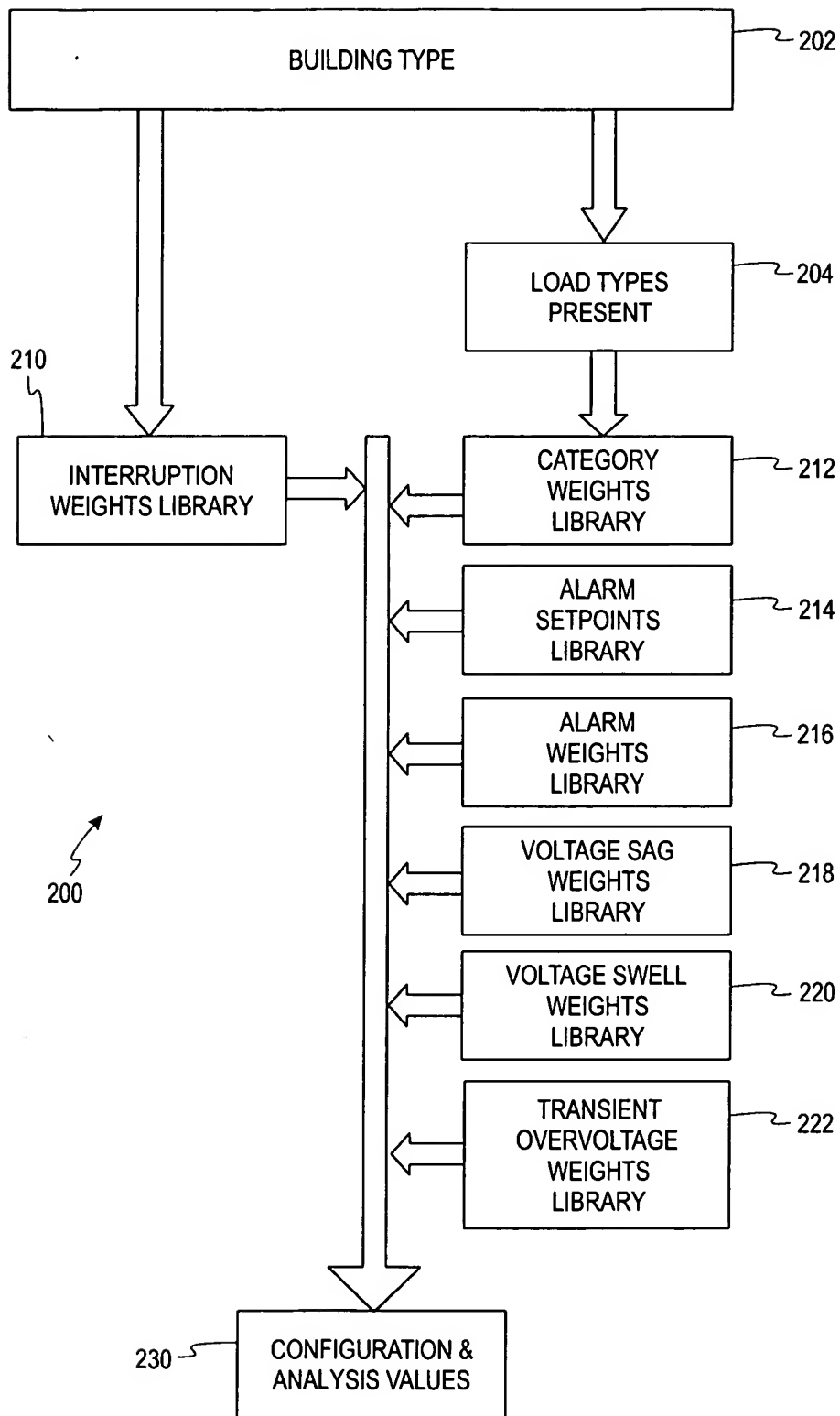


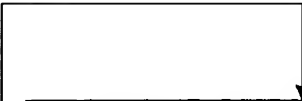
Fig. 1

*Fig. 2*

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| | |
|----|------------------------------|
| 1 | AIRCRAFT HANGER |
| 2 | CONTROL TOWER |
| 3 | TERMINAL |
| 4 | EMERGENCY RESPONSE |
| 5 | BAGGAGE HANDLING |
| 6 | AMUSEMENT RIDE |
| 7 | OFFICE BUILDING |
| 8 | RESTAURANT |
| 9 | RETAIL |
| 10 | CLASSROOM |
| 11 | DORMITORY |
| 12 | LIBRARY |
| 13 | DATA PROCESSING |
| 14 | BARRACKS |
| 15 | HOSPITAL |
| 16 | SEMICONDUCTOR FAB BLDG |
| 17 | WASTE WATER TREATMENT PLANT |
| 18 | AUTOMOTIVE MANUFACTURING |
| 19 | FOOD/BEVERAGE PROCESSING |
| 20 | PLASTIC EXTRUSION |
| 21 | CEMENT/GLASS/STONE |
| 22 | SMELTING |
| 23 | PAPER/WOOD/PULP |
| 24 | PETROCHEMICAL PROCESSING |
| 25 | PHARMACEUTICAL MANUFACTURING |
| 26 | PRINTING AND PUBLISHING |
| 27 | ARENA |
| 28 | CASINO |
| 29 | RUBBER/PLASTICS PROCESSING |
| 30 | METAL MINING |
| 31 | TEXTILE MANUFACTURING |
| 32 | OIL DRILLING |
| 33 | GYMNASIUM |
| 34 | UTILITIES/CENTRAL PLANT |
| 35 | SHIPPING |
| 36 | WAREHOUSE |
| 37 | FURNITURE MANUFACTURING |
| 38 | WATER TREATMENT |
| 39 | PARKING GARAGE |
| 40 | DAIRY |
| 41 | GIN |
| 42 | BULK MAIL PROCESSING |
| 43 | ELECTRONIC MANUFACTURING |
| 44 | RAILROAD SYSTEMS |
| 45 | WATER/SEWAGE PUMPING STATION |
| 46 | OIL WELL |



| | |
|----|---------------------------|
| 47 | AGRICULTURAL PROCESSING |
| 48 | METAL FOUNDRY |
| 49 | COAL MINE |
| 50 | SLAUGHTERHOUSE |
| 51 | VETERINARY MEDICINE |
| 52 | WATER DRILLING |
| 53 | BAKERY |
| 54 | MACHINE SHOP |
| 55 | COMMUNICATIONS |
| 56 | AEROSPACE MANUFACTURING |
| 57 | PUBLIC TRANSPORTATION |
| 58 | DOCK SHIPPING SHORE POWER |
| 59 | BANKING SERVICES |
| 60 | HOTEL |
| 61 | THEATRE |
| 62 | NURSING HOME |
| 63 | LABORATORY |
| 64 | ZOO |
| 65 | CHURCH |
| 66 | COURTHOUSE |
| 67 | CORRECTIONAL INSTITUTION |
| 68 | AEROSPACE CONTROL |

Fig. 3
BUILDING TYPES

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| BUILDING TYPE | MOTORS, POLYPHASE, INDUCTION | MOTORS, POLYPHASE, SYNCHRONOUS | MOTORS, DC GEAR | MOTORS, DC BRUSHLESS | MOTORS, DC SERVO | ASD, DC | ASD, AC PWM | ASD, AC CSI | ASD, AC VSI | LIGHTING, FLUORESCENT | LIGHTING, INCANDESCENT | LIGHTING, HP SODIUM | LIGHTING, LP SODIUM | LIGHTING, MERCURY VAPOR | LIGHTING, METAL HALIDE | LIGHTING, TUNGSTEN HALOGEN |
|--------------------|------------------------------|--------------------------------|-----------------|----------------------|------------------|---------|-------------|-------------|-------------|-----------------------|------------------------|---------------------|---------------------|-------------------------|------------------------|----------------------------|
| AIRCRAFT HANGER | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CONTROL TOWER | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| TERMINAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EMERGENCY RESPONSE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| BAGGAGE HANDLING | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| AMUSEMENT RIDE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| OFFICE BUILDING | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| RESTAURANT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| RETAIL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| CLASSROOM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| DORMITORY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |

Fig. 4
LOAD TYPES PRESENT
LIBRARY (EXCERPT)

| | | DAILY | | WEEKLY | | MONTHLY | |
|--------------------|--------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | INTERRUPTION WEIGHTING LIBRARY | SHORT-TERM INTERRUPTION (< 3 MIN) | LONG-TERM INTERRUPTION (>= 3 MIN) | SHORT-TERM INTERRUPTION (< 3 MIN) | LONG-TERM INTERRUPTION (>= 3 MIN) | SHORT-TERM INTERRUPTION (< 3 MIN) | LONG-TERM INTERRUPTION (>= 3 MIN) |
| BUILDING TYPE | | | | | | | |
| DEFAULT | 0 | 1 | 1 | 2 | 2 | 3 | 3 |
| AIRCRAFT HANGER | 1 | 1 | 1 | 2 | 2 | 3 | 3 |
| CONTROL TOWER | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| TERMINAL | 3 | 1 | 1 | 2 | 2 | 3 | 3 |
| EMERGENCY RESPONSE | 4 | 1 | 1 | 2 | 2 | 3 | 3 |
| BAGGAGE HANDLING | 5 | 1 | 1 | 2 | 2 | 3 | 3 |
| AMUSEMENT RIDE | 6 | 1 | 1 | 2 | 2 | 3 | 3 |
| OFFICE BUILDING | 7 | 1 | 1 | 2 | 2 | 3 | 3 |
| RESTAURANT | 8 | 1 | 1 | 2 | 2 | 3 | 3 |
| RETAIL | 9 | 1 | 1 | 2 | 2 | 3 | 3 |
| CLASSROOM | 10 | 1 | 1 | 2 | 2 | 3 | 3 |
| DORMITORY | 11 | 1 | 1 | 2 | 2 | 3 | 3 |

Fig. 5
 INTERRUPTIONS WEIGHTING
 LIBRARY (EXCERPT)

| | CATEGORY WEIGHTS LIBRARY | | | | | | | | | | |
|------------------------------|--------------------------|--------------|-------------|-------------------|---------------------|---------------------|---------------|--------------|----------------|---------|------------------------|
| | | UNDERVOLTAGE | OVERVOLTAGE | VOLTAGE UNBALANCE | WAVEFORM DISTORTION | FREQUENCY DEVIATION | INTERRUPTIONS | VOLTAGE SAGS | VOLTAGE SWELLS | FLICKER | TRANSIENT OVERVOLTAGES |
| LOAD TYPE | | | | | | | | | | | |
| DEFAULT | 0 | 10 | 9 | 4 | 8 | 4 | 10 | 10 | 8 | 4 | 8 |
| AC MOTORS | 1 | 10 | 10 | 10 | 7 | 3 | 10 | 10 | 7 | 2 | 8 |
| DC MOTORS | 2 | 10 | 10 | 10 | 7 | 3 | 10 | 10 | 7 | 2 | 8 |
| ASDS | 3 | 10 | 10 | 8 | 10 | 3 | 10 | 10 | 8 | 3 | 8 |
| LIGHTING 1 (INC., FLUOR.) | 4 | 7 | 8 | 0 | 5 | 3 | 10 | 10 | 6 | 8 | 5 |
| LIGHTING 2 (HID) | 5 | 9 | 8 | 0 | 5 | 5 | 10 | 10 | 6 | 7 | 5 |
| COMPUTERS | 6 | 10 | 9 | 0 | 8 | 3 | 10 | 10 | 9 | 2 | 8 |
| MEDICAL IMAGING EQUIPMENT | 7 | 10 | 9 | 0 | 8 | 3 | 10 | 10 | 9 | 2 | 8 |
| SEMICONDUCTOR MFG. EQUIPMENT | 8 | 10 | 9 | 0 | 8 | 3 | 10 | 10 | 9 | 2 | 8 |
| CNC MACHINE TOOLS | 9 | 10 | 9 | 0 | 8 | 3 | 10 | 10 | 9 | 2 | 8 |
| OFFICE EQUIPMENT | 10 | 10 | 9 | 0 | 8 | 3 | 10 | 10 | 9 | 2 | 8 |
| ARC FURNACES | 11 | 9 | 9 | 5 | 10 | 3 | 10 | 10 | 8 | 8 | 5 |
| CAPACITORS | 12 | 10 | 10 | 8 | 10 | 3 | 3 | 5 | 5 | 5 | 5 |
| TRANSFORMERS | 13 | 10 | 10 | 10 | 8 | 3 | 0 | 0 | 0 | 5 | 8 |
| REACTORS | 14 | 8 | 8 | 8 | 0 | 0 | 0 | 8 | 8 | 0 | 0 |

Fig. 6
CATEGORY WEIGHTS
LIBRARY

| LOAD TYPE | ALARM SETPOINT LIBRARY | UNDERVOLTAGE LEVEL 1 | UNDERVOLTAGE LEVEL 2 | OVERVOLTAGE LEVEL 1 | OVERVOLTAGE LEVEL 2 | VOLTAGE UNBALANCE LEVEL 1 | VOLTAGE UNBALANCE LEVEL 2 | OVER THD LEVEL 1 | OVER THD LEVEL 2 | OVER WORST HARMONIC LEVEL 1 | OVER WORST HARMONIC LEVEL 2 | OVER FREQUENCY LEVEL 1 | OVER FREQUENCY LEVEL 2 | UNDER FREQUENCY LEVEL 1 | UNDER FREQUENCY LEVEL 2 | OVER FLICKER LEVEL 1 | OVER FLICKER LEVEL 2 |
|---|------------------------|----------------------|----------------------|---------------------|---------------------|---------------------------|---------------------------|------------------|------------------|-----------------------------|-----------------------------|------------------------|------------------------|-------------------------|-------------------------|----------------------|----------------------|
| DEFAULT | 0 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| MOTORS, POLYPHASE, INDUCTION | 1 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| MOTORS, DC GEAR | 2 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| ASD, DC | 3 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| LIGHTING, FLOURESCENT | 4 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| LIGHTING, HP SODIUM | 5 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| COMPUTERS | 6 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| MEDICAL IMAGING EQUIPMENT | 7 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| SEMICONDUCTOR MANUFACTURING EQUIPMENT | 8 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |

Fig. 7

ALARM SETPOINTS LIBRARY

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| | | | | | | | | | | | | | | | | | |
|--------------------------------------|----|------|------|-------|-------|-----|-----|-----|-----|-----|-----|-------|-------|------|------|----|-----|
| CNC MACHINE | 9 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| TOOLS | | | | | | | | | | | | | | | | | |
| OFFICE EQUIPMENT (COPIERS, PRINTERS) | 10 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| ARC FURNACE | 11 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| CAPACITORS | 12 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| TRANSFORMERS | 13 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |
| REACTOR | 14 | 9500 | 9000 | 10500 | 11000 | 150 | 200 | 400 | 500 | 250 | 300 | 10050 | 10083 | 9950 | 9917 | 50 | 100 |

Fig. 7-1
ALARM SETPOINTS LIBRARY

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| LOAD TYPE | ALARM WEIGHTING LIBRARY | UNDERVOLTAGE LEVEL 1 | UNDERVOLTAGE LEVEL 2 | OVERVOLTAGE LEVEL 1 | OVERVOLTAGE LEVEL 2 | VOLTAGE UNBALANCE LEVEL 1 | VOLTAGE UNBALANCE LEVEL 2 | OVER THD LEVEL 1 | OVER THD LEVEL 2 | OVER WORST HARMONIC LEVEL 1 | OVER WORST HARMONIC LEVEL 2 | OVER FREQUENCY LEVEL 1 | OVER FREQUENCY LEVEL 2 | UNDER FREQUENCY LEVEL 1 | UNDER FREQUENCY LEVEL 2 | OVER FLICKER LEVEL 1 | OVER FLICKER LEVEL 2 |
|--|----------------------------|----------------------|----------------------|---------------------|---------------------|------------------------------|------------------------------|------------------|------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------|----------------------|
| DEFAULT | 0 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| MOTORS, POLYPHASE, INDUCTION | 1 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| MOTORS, DC GEAR | 2 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| ASD, DC | 3 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| LIGHTING, FLOURESCENT | 4 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| LIGHTING, HP SODIUM | 5 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| COMPUTERS | 6 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| MEDICAL IMAGING EQUIPMENT | 7 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| SEMICONDUCTOR MANUFACTURING EQUIPMENT | 8 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| CNC MACHINE TOOLS | 9 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| OFFICE EQUIPMENT (COPIERS, PRINTERS) | 10 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| ARC FURNACE | 11 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| CAPACITORS | 12 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| TRANSFORMERS | 13 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |
| REACTOR | 14 | 240 | 120 | 240 | 120 | 600 | 100 | 600 | 10 | 600 | 10 | 120 | 30 | 120 | 30 | 800 | 60 |

Fig. 8

ALARM WEIGHTS LIBRARY

| DEPTH (D) % NOMINAL | DURATION (T) SECONDS | | | | | | | | | | |
|------------------------|----------------------|----------------------|---------------------|--------------------|--------------------|------------------|----------------|-----------------|------------------|------------------|-------------------|
| | $0.01 \leq t < 0.02$ | $0.02 \leq t < 0.05$ | $0.05 \leq t < 0.1$ | $0.1 \leq t < 0.2$ | $0.2 \leq t < 0.5$ | $0.5 \leq t < 1$ | $1 \leq t < 3$ | $3 \leq t < 10$ | $10 \leq t < 20$ | $20 \leq t < 60$ | $60 \leq t < 180$ |
| $10 \leq D < 20$ | OK | OK | OK | OK | OK | OK | OK | OK | 1 | 1 | 1 |
| $20 \leq D < 30$ | OK | OK | OK | OK | OK | 1 | 1 | 1 | 1 | 1 | 1 |
| $30 \leq D < 40$ | OK | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $40 \leq D < 50$ | OK | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $50 \leq D < 60$ | OK | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $60 \leq D < 80$ | OK | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $80 \leq D < 99$ | OK | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Fig. 9
VOLTAGE SAGS WEIGHTING
LIBRARY (EXCERPT)

| MAGNITUDE (M) % NOMINAL | $0.01 \leq t < 0.02$ | $0.02 \leq t < 0.05$ | $0.05 \leq t < 0.1$ | $0.1 \leq t < 0.2$ | $0.2 \leq t < 0.5$ | $0.5 \leq t < 1$ | $1 \leq t < 3$ | $3 \leq t < 10$ | $10 \leq t < 20$ | $20 \leq t < 60$ | $60 \leq t < 180$ |
|----------------------------|----------------------|----------------------|---------------------|--------------------|--------------------|------------------|----------------|-----------------|------------------|------------------|-------------------|
| $110 < M \leq 120$ | OK | OK | OK | OK | OK | 1 | 1 | 1 | 1 | 1 | 1 |
| $120 < M \leq 130$ | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $130 < M \leq 140$ | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $140 < M \leq 150$ | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $150 < M \leq 170$ | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $170 < M \leq 200$ | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $M > 200$ | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Fig. 10
VOLTAGE SWELLS WEIGHTING
LIBRARY (EXCERPT)

| DAILY MAGNITUDE (M) % NOMINAL | DURATION (t) MICROSECONDS | | | | | | |
|-------------------------------------|---------------------------|------------------|-------------------|--------------------|--------------------|---------------------|----------------------|
| | $t < 20$ | $20 \leq t < 50$ | $50 \leq t < 100$ | $100 \leq t < 200$ | $200 \leq t < 500$ | $500 \leq t < 1000$ | $1000 \leq t < 2000$ |
| $200 < M \leq 300$ | 4 | 4 | 4 | 4 | 4 | 2 | 2 |
| $300 < M \leq 400$ | 4 | 4 | 4 | 4 | 2 | 2 | 2 |
| $400 < M \leq 500$ | 4 | 4 | 4 | 2 | 2 | 2 | 2 |
| $500 < M \leq 600$ | 4 | 4 | 3 | 2 | 2 | 2 | 2 |
| $600 < M \leq 700$ | 4 | 3 | 3 | 2 | 2 | 2 | 2 |
| $700 < M \leq 800$ | 4 | 3 | 3 | 2 | 2 | 2 | 2 |
| $800 < M \leq 900$ | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| $900 < M \leq 1000$ | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| $M > 1000$ | 3 | 3 | 3 | 2 | 2 | 2 | 2 |

Fig. 11

TRANSIENT OVERVOLTAGE
WEIGHTING LIBRARY (EXCERPT)

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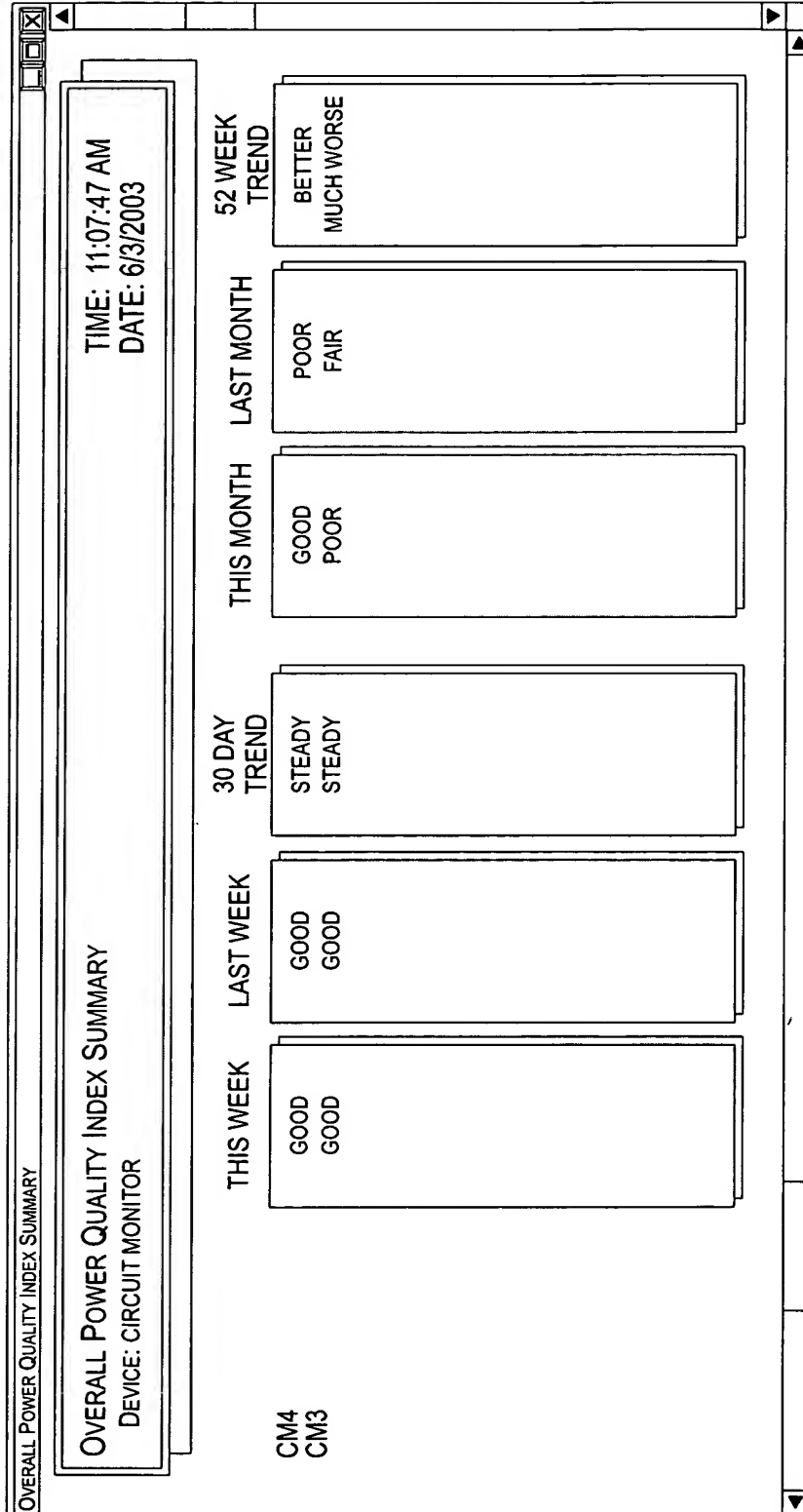


Fig. 12
DISPLAY OF OVERALL POWER
QUALITY INDEX SUMMARY

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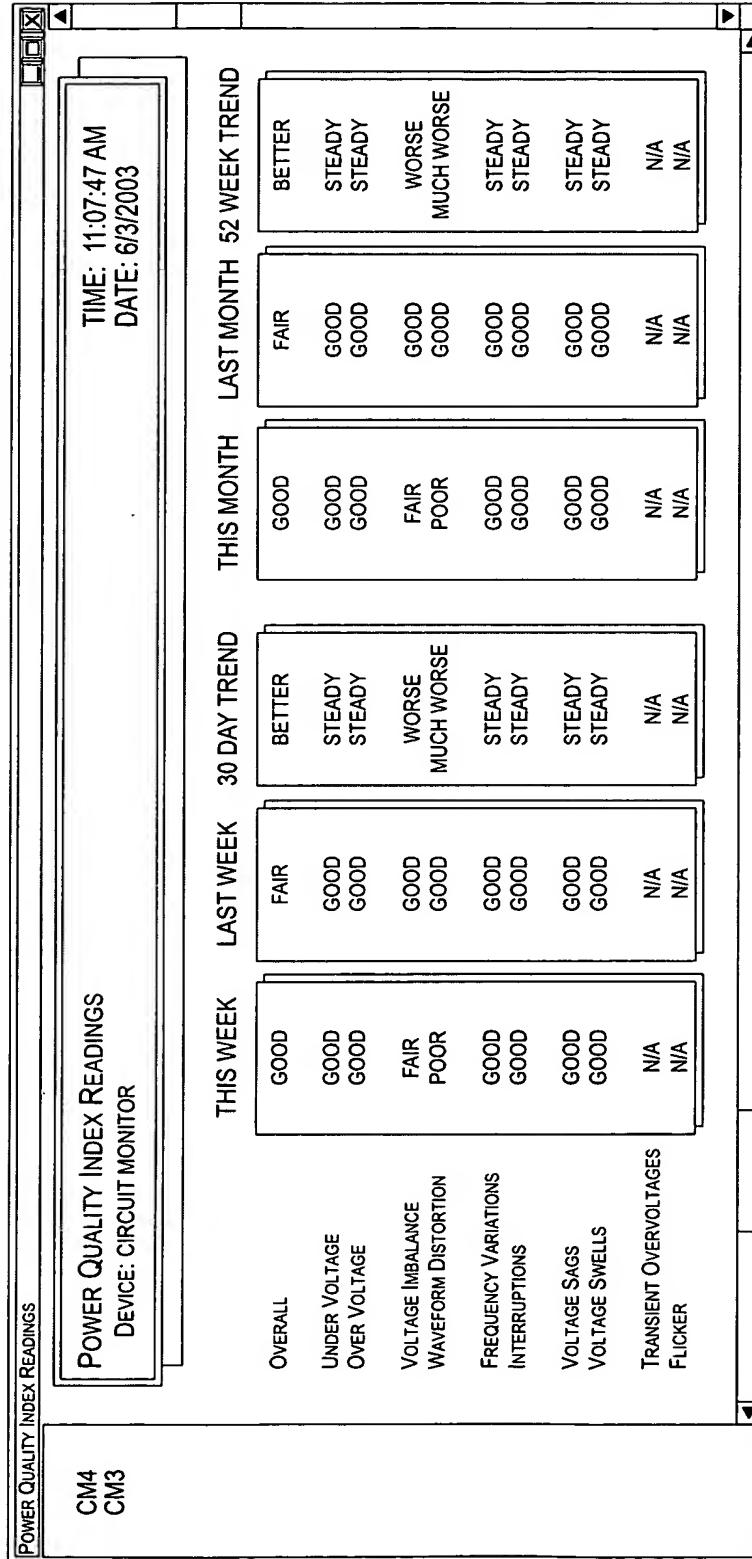


Fig. 13
DISPLAY OF POWER
QUALITY INDEX READINGS